

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

PCT

To:
BARKER BRETTELL
138 Hagley Road
Edgbaston
Birmingham B16 9PW
UNITED KINGDOM

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL SEARCH REPORT AND
THE WRITTEN OPINION OF THE INTERNATIONAL
SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Applicant's or agent's file reference ASW1525	Date of mailing (day/month/year) 21/03/2005
International application No. PCT/GB2004/001751	International filing date (day/month/year) 23/04/2004
Applicant CXR LIMITED	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

Filing of amendments and statement under Article 19:

The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

When? The time limit for filing such amendments is normally 2 months from the date of transmittal of the International Search Report; however, for more details, see the notes on the accompanying sheet.

Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes
1211 Geneva 20, Switzerland, Facsimile No. 41-22 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.
3. ☐ **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:
- ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.
 - ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. Reminders


Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until **30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the International Searching Authority  European Patent Office, P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl. Fax: (+31-70) 340-3016	Authorized officer Gregory Adam
--	---

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference ASW1525	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/GB2004/001751	International filing date (day/month/year) 23/04/2004	(Earliest) Priority Date (day/month/year) 25/04/2003
Applicant CXR LIMITED		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (See Box II).

3. ☐ **Unity of invention is lacking** (see Box III).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,

a. the figure of the **drawings** to be published with the abstract is Figure No. 2

☒ as suggested by the applicant.

☐ as selected by this Authority, because the applicant failed to suggest a figure.

☐ as selected by this Authority, because this figure better characterizes the invention.

b. ☐ none of the figures is to be published with the abstract.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB2004/001751

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G01F1/74 G01V5/12 E21B21/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G01F G01N G01V E21B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 228 353 A (JOHNSON ET AL) 14 October 1980 (1980-10-14) column 2, line 20 - line 59 column 3, line 59 - line 63 column 4, line 3 - line 44 column 5, line 5 - line 61 column 8, line 1 - column 9, line 38 column 14, line 54 - column 15, line 45 column 16, line 42 - line 46 figures 6,7,10 ----- -/--	1-32

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

° Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the international search

10 March 2005

Date of mailing of the international search report

21/03/2005

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
 Fax: (+31-70) 340-3016

Authorized officer

Reto, D

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 99/60387 A (SCHLUMBERGER LIMITED; SCHLUMBERGER CANADA LIMITED; SCHLUMBERGER TECHNO) 25 November 1999 (1999-11-25) page 1, paragraph 3 page 4, paragraphs 2,3 page 7, paragraphs 1,4,5 page 8, paragraph 1 page 9, paragraph 3 page 15 figure 1b	1-32
A	US 4 868 856 A (FRITH ET AL) 19 September 1989 (1989-09-19) column 1, line 12 - line 34 column 4, line 35 - column 5, line 7 column 6, line 51 - line 65; figure 3	1-32

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB2004/001751

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4228353	A	14-10-1980	NONE	
WO 9960387	A	25-11-1999	US 6097786 A AU 4083399 A CA 2332376 A1 CN 1309768 A EP 1078251 A2 NO 20005844 A WO 9960387 A2	01-08-2000 06-12-1999 25-11-1999 22-08-2001 28-02-2001 12-01-2001 25-11-1999
US 4868856	A	19-09-1989	DE 3671294 D1 EP 0216526 A1 GB 2180065 A , B	21-06-1990 01-04-1987 18-03-1987

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/GB2004/001751

International filing date (day/month/year)
23.04.2004

Priority date (day/month/year)
25.04.2003

International Patent Classification (IPC) or both national classification and IPC
G01F1/74, G01V5/12, E21B21/08

Applicant
CXR LIMITED

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

21.06.05
DIARIED ITEM

Name and mailing address of the ISA:



European Patent Office - P.B. 5818 Patentlaan 2
NL-2280 HV Rijswijk - Pays Bas
Tel. +31 70 340 - 2040 Tx: 31 651 epo nl
Fax: +31 70 340 - 3016

Authorized Officer

Reto, D

Telephone No. +31 70 340-4941



Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material:
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing:
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos. 33,34

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):

☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 33,34 are so unclear that no meaningful opinion could be formed (*specify*):

see separate sheet

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☐ no international search report has been established for the whole application or for said claims Nos.

☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:

the written form

☐ has not been furnished

☐ does not comply with the standard

the computer readable form

☐ has not been furnished

☐ does not comply with the standard

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-bis of the Administrative Instructions.

☐ See separate sheet for further details

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/GB2004/001751

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	5,9,10,12-14,16,17,22,26,27,29-31
	No: Claims	1-4,6-8,11,15,18-21,23-25,28,32
Inventive step (IS)	Yes: Claims	
	No: Claims	1-32
Industrial applicability (IA)	Yes: Claims	1-32
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item III

Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

Claims 33 and 34 only refer to the description and drawings. According to Rule 6.2(a) PCT, claims should not contain such references except where absolutely necessary, which is not the case here. As a consequence, these claims contain no technical features and therefore no opinion could be established.

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1 Reference is made to the following documents:

D1: US-A-4 228 353 (JOHNSON ET AL) 14 October 1980 (1980-10-14)

D2: WO 99/60387 A (SCHLUMBERGER LIMITED; SCHLUMBERGER CANADA LIMITED; SCHLUMBERGER TECHNO) 25 November 1999 (1999-11-25)

D3: US-A-4 868 856 (FRITH ET AL) 19 September 1989 (1989-09-19)

2 CLARITY

2.1 The terms "X-ray scanner **arranged to...**" and "...control means **arranged to...**" used in **claim 1** are vague and imprecise. These are functional terms and they do not specify any structural features as how the X-ray scanner or control means are arranged, as required by an apparatus claim, thereby resulting in a lack of clarity (Article 6 PCT). The same remarks apply to **claims 2-17**.

Moreover, **claims 1-17** are defined by references to features relating to the apparatus use and not to structural features characterising it and therefore these claims are unclear.

2.2 In **claim 9**, it is not clear what a "measure of the buoyancy" is and how its

determination is achieved. The same remarks hold for **claim 26**.

- 2.3 It is not clear, in **claims 10 and 27**, how the control means define a model. In fact, the control means receive input parameters and calculate a variable based on an algorithm, thus not defining any calculating model.

3 INDEPENDENT CLAIMS 1 AND 18

- 3.1 Furthermore, the above-mentioned lack of clarity notwithstanding, the subject-matter of **claim 1** is not new in the sense of Article 33(2) PCT, and therefore the criteria of Article 33(1) PCT are not met.

The document D1 discloses (the references in parentheses applying to this document) an apparatus for monitoring in real time the movement of a plurality of substances in a mixture, with:

- an X-ray scanner (118, 126, 134) arranged to make a plurality of scans of the mixture over a monitoring period to produce a plurality of scan data sets (see column 3, lines 59-63, column 14, line 65-column 15, line 1, column 16, lines 42-46 and Figs. 6-9), and;
- control means (202) arranged to analyse the data sets to identify volumes of each of the substances (see column 4, lines 20-30 and column 5, lines 5-61);
- and to measure their movement (see column 4, lines 39-44).

Therefore claim 1 is not new. **Claim 18** is the method claim corresponding to the apparatus claim 1 and thus, from the above remarks, also lacks novelty over D1. Moreover, claims 1 and 18 also lack novelty over D2 (see page 7, lines 1-9, lines 22-30, page 9, lines 27-30, page 15, lines 1-4 and Figs. 1a, 1b).

4 DEPENDENT CLAIMS 2-17 AND 19-32

- 4.1 Dependent claims 2-17 and 19-32 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT

in respect of novelty and/or inventive step. The reasons are as follows:

- the features of **claims 2, 3, 19 and 20** are already known, see for example D1 (column 16, lines 42-46, column 9, lines 34-38) and D2 (page 7, lines 22-30 and page 9, lines 27-30) and are not new;
- **claims 4 and 21** are not new: to determine the amount of one of the substances using the data sets is disclosed in D2, page 15;
- **claims 5 and 22** relate to a time averaged value of the amount of one substance and are not inventive, see for example D3, column 6, lines 61-63;
- the features of **claims 6-8 and 23-25** are known, see for example D2, page 7, lines 3-8 and page 9, lines 27-30), thus are not new;
- **claims 9, 10, 26 and 27** relate to normal features and are not inventive;
- the feature of determining a flow rate, in **claims 11 and 28**, is not inventive, see for example D1, column 4, lines 3-6;
- The features of **claims 12-14 and 29-31** of using a lower or higher spatial resolution analysis are not inventive since it is obvious in tomography apparatus to use the appropriate resolution according to the purpose for which the apparatus is used.
- the scanner being placed around a pipe, in **claims 15 and 32**, is disclosed in D1, see Fig. 7 and therefore these claims are not new;
- the features of **claims 16 and 17**, display means to display an image of the mixture, are commonly used in flowmeter/tomography apparatus and are not inventive.

5 REMARKS

5.1 The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

5.2 Independent claims 1 and 18 are not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art being placed in the preamble (Rule 6.3(b)(I) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).

5.3 Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/GB2004/001751

disclosed in the documents D1 and D2 is not mentioned in the description, nor are these documents identified therein.